$$T_S = T_{SM} + 2\,(L_{ges} * 5\,\frac{\mu s}{km} + 2\,N_K * V_K + Tsdx + 20\,T_{Bit})$$

with

T_s – slot time,

T_{SM} – a safety margin,

L_{ges} – sum of the lengths of the segments with optical signal transmission,

N_K – number of coupling devices,

V_K – signal propagation time through a coupling device,

Tsdx – maximum delay time after which a polled user must reply to a poll message, and

T_{Bit} – the time of one bit at the correspondingly set data rate.

IN THE CLAIMS:

Please cancel claims 19-35 without prejudice or disclaimer.

Please enter the following amended claims:

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1. (Amended) A network with a plurality of users, comprising:

a plurality of segments; and

at least one coupling device operable to connect the plurality of segments, the at least one coupling device including a measuring device for measuring a predefined slot time in the users using GAP queries with which active users using a PROFIBUS DP protocol for data transmission cyclically check whether new users have been connected to the network.

2. (Amended) The network as claimed in Claim 1, wherein at least one active user is configured to execute cyclical GAP queries to a non-existent user.

3. (Amended) The network as claimed in Claim 1, wherein the predefined slot time in the users is at least twice the time that elapses at maximum in an optical double ring between sending a GAP query message and receiving a reply message.

A6 cont.

4. (Amended) A network with a plurality of users wherein the network is divided into a plurality of segments with bidirectional data transmission, wherein a first segment and a second segment of the plurality of segments are interconnected by a first coupling device, and wherein the second segment and a third segment of the plurality of segments are interconnected by a second coupling device, wherein the first coupling device includes a detecting device and a blocking device for detecting corruption of a message through faults on the second segment and, after detection of a fault, to block the forwarding to the first segment of messages received in the second segment, and the second coupling device includes a detecting device and a blocking device to block the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages by the first coupling device.

5. (Amended) The network as claimed in Claim 4, wherein the blocking device of the first coupling device blocks the forwarding of messages to the second segment upon detection of a fault in the second segment for at least a minimum segmentation time, and the second coupling device includes a monitoring device for monitoring transmission activities on the second

segment, which checks compliance with a maximum idle time on the second segment, and if the maximum idle time is exceeded, blocks the forwarding to the third segment of messages received on the second segment.

6. (Amended) The network as claimed in Claim 4, wherein forwarding of messages by the first coupling device is blocked only after determination of a predefined number of errors.

7. (Amended) The network as claimed in Claim 4, wherein the detecting device detects corruption if a signal level in a received message persists longer than a predefined time.

8. (Amended) The network as claimed in Claim 7, wherein the detecting device detects the corruption if in a received message, the signal level remains on a low level for 13 consecutive bit times.

9. (Amended) The network as claimed in Claim 4, wherein the detecting device detects corruption if more than a predefined number of characters are contained in a received message.

10. (Amended) The network as claimed in Claim 9, wherein the predefined number of characters is 262.

11. (Amended) The network as claimed in Claim 4, wherein the second coupling device supplements a message to be forwarded from the third segment to the second segment,

irrespective of possibly present control information valid on the third segment, by control information valid on the second segment, which is adapted to the message sent on the second segment, so that the first coupling device connected to the second segment can evaluate the control information to assess a transmission quality on the second segment.

12. (Amended) The network as claimed in Claim 11, wherein the first coupling device generates control information for a message received on the second segment, compares the generated control information with the received control information, and indicates an error in case of a mismatch between the received control information and the generated control information.

13. (Amended) The network as claimed in Claim 12, wherein the blocking device of the first coupling device blocks the forwarding to the third segment of the message received on the second segment in case of a mismatch between the received control information and the generated control information.

14. (Amended) The network as claimed in Claim 11, wherein the control information is a CRC (Cyclic Redundancy Check) character.

15. (Amended) The network as claimed in Claim 14, wherein the CRC character comprises 5 bits.

16. (Amended) The network as claimed in Claim 14, wherein the second coupling device supplements the message by an additional stop bit and sending the control information immediately after the additional stop bit.

17. (Amended) The network as claimed in Claim 4, wherein the blocking device of the second coupling device unblocks the forwarding if a check of transmission quality on the second segment by special messages transmitted via the second segment from the first coupling device to the second coupling device and vice versa shows good transmission quality.

18. (Amended) The network as claimed in Claim 17, wherein the first and the second coupling devices include a checking device for performing a handshake procedure to check the transmission quality on the second segment by special messages in which,

(a) the first coupling device, after expiration of the minimum segmentation time, sends a first special message via the second segment to the second coupling device;

(b) the second coupling device in case of error-free receipt of the first special message returns a second special message via the second segment to the first coupling device,

(c) the first coupling device in case of error-free receipt of the second special message sends a third special message via the second segment to the second coupling device, and

(d) the second coupling device in case of error-free receipt of the third special message returns a fourth special message via the second segment to the first coupling device, and

the checking device re-performs the handshake procedure if a time between sending the first special message and receiving the returned second special message is greater than a predefined maximum time.

Please add the following new claims:

--36. The network as claimed in Claim 1, wherein the slot time is a time for which an active user waits after a GAP query for a reply message from a polled user.

37. The network as claimed in Claim 5, wherein the maximum idle time on the second segment is substantially half the measured slot time.

38. The network as claimed in Claim 5, wherein the minimum segmentation time is greater than the maximum idle time.

39. The network as claimed in Claim 5, wherein the minimum segmentation time is predefined.

40. The network as claimed in Claim 4, wherein the first, second, and third coupling devices include a measuring device for measuring a predefined slot time in the users using GAP queries with which active users using a PROFIBUS DP protocol for data transmission cyclically check whether new users have been connected to the network.

41. The network as claimed in Claim 40, wherein the predefined slot time is a time for which an active user waits after a GAP query for a reply message from a polled user.

42. The network as claimed in Claim 4, wherein at least one active user is configured to execute cyclical GAP queries to a non-existent user.

A7 cont.

43. The network as claimed in Claim 40, wherein the predefined slot time in the users is at least twice the time that elapses at maximum in an optical double ring between sending a GAP query message and receiving a reply message.

44. A method for transmitting data comprising:

connecting a first segment and a second segment of a plurality of segments of a network;

connecting the second segment and a third segment of the plurality of segments;

detecting corruption of a message through faults on the second segment and, after detection of a fault, blocking forwarding to the first segment of messages received in the second segment; and

blocking the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages to the first segment.

45. A method for transmitting data according to Claim 44, further comprising:

blocking the forwarding of messages to the second segment upon detection of a fault in the second segment for at least a minimum segmentation time, and;

monitoring transmission activities on the second segment by checking compliance with a maximum idle time on the second segment, and if the maximum idle time is exceeded, blocking the forwarding to the third segment of messages received on the second segment.

46. A method for transmitting data according to Claim 44, further comprising: determining a predefined number of errors prior to said blocking of the forwarding of the messages.

A7 cont.

47. A method for transmitting data according to Claim 44, wherein corruption is detected if a signal level in a received message persists longer than a predefined time.

48. A method for transmitting data according to Claim 47, wherein the corruption is detected if the signal level remains on a low level for 13 consecutive bit times.

49. A method for transmitting data according to Claim 44, wherein corruption is detected if more than a predefined number of characters are contained in a received message.

50. A method for transmitting data according to Claim 49, wherein the predefined number of characters is 262.

51. A method for transmitting data according to Claim 44, further comprising: supplementing a message to be forwarded from the third segment to the second segment,

irrespective of possibly present control information valid on the third segment, by control information valid on the second segment, which is adapted to the message sent on the second segment, so that the control information can be evaluated to assess a transmission quality on the second segment.

52. A method for transmitting data according to Claim 51, further comprising: generating control information for a message received on the second segment, comparing the generated control information with received control information, and indicating an error in case of a mismatch between the received control information and the generated control information.

53. A method for transmitting data according to Claim 52, further comprising: blocking the forwarding to the third segment of the message received on the second segment in case of a mismatch between the received control information and the generated control information.

54. A method for transmitting data according to Claim 51, wherein the control information is a CRC (Cyclic Redundancy Check) character.

55. A method for transmitting data according to Claim 54, wherein the CRC character comprises 5 bits.

56. A method for transmitting data according to Claim 54, further comprising:

supplementing the message by an additional stop bit and sending the control information immediately after the additional stop bit.

57. A method for transmitting data according to Claim 45, further comprising: unblocking forwarding of the messages if a check of transmission quality on the second segment by special messages transmitted via the second segment from the first coupling device to the second coupling device and vice versa shows good transmission quality.

A7 cont.

58. A method for transmitting data according to Claim 57, further comprising: performing a handshake procedure to check the transmission quality on the second segment by special messages in which,

(a) the first coupling device, after expiration of the minimum segmentation time, sends a first special message via the second segment to the second coupling device;

(b) the second coupling device in case of error-free receipt of the first special message returns a second special message via the second segment to the first coupling device,

(c) the first coupling device in case of error-free receipt of the second special message sends a third special message via the second segment to the second coupling device, and

(d) the second coupling device in case of error-free receipt of the third special message returns a fourth special message via the second segment to the first coupling device, and

re-performing the handshake procedure if a time between sending the first special message and receiving the returned second special message is greater than a predefined maximum time.

59. A method for transmitting data according to Claim 45, wherein the maximum idle time on the second segment is substantially half the measured slot time.

60. A method for transmitting data according to Claim 45, wherein the minimum segmentation time is greater than the maximum idle time.

61. A method for transmitting data according to Claim 45, wherein the minimum segmentation time is predefined.

62. A network with a plurality of users according to claim 4, further comprising a RXD device, a memory, and a TXD device which act collectively as a re-timer preventing propagation of distorted messages in the network.

63. A network with a plurality of users according to claim 62, wherein the memory compensates bit time fluctuations that occur during the data transmission.--